FUNCTIONS IN DETAIL

Important things you should know about functions

GOALS

- Understand Scope
- Write Higher Order Functions
- Pass functions as callbacks

SCOPE

Variable "visibility"

- The location where a variable is defined dictates **where we have access to that variable**

FUNCTION SCOPE

```
function helpMe(){

    let msg = "I'm on fire!";

    msg; //"I'm on fire";
}

msg; //NOT DEFINED!
```

msg is scoped to the *helpMe* function

FUNCTION SCOPE

```
let bird = 'mandarin duck';

function birdWatch(){

    let bird = 'golden pheasant';
    bird; //'golden pheasant'
}

bird; //'mandarin duck'
```

bird is scoped to birdWatch function

BLOCK SCOPE

```
let radius = 8;

if(radius > 0){

    const PI = 3.14;

    let circ = 2 * PI * radius;

}

console.log(radius); //8
console.log(PI); //NOT DEFINED
console.log(circ); //NOT DEFINED
```

PI & *circ* are scoped to the BLOCK

LEXICAL SCOPE

```
function outer() {
  let hero = "Black Panther";

  function inner() {
    let cryForHelp = `${hero}, please save me!`
    console.log(cryForHelp);
  }

  inner();
}
```

FUNCTION EXPRESSIONS

There's another syntax we can use to define functions:

```
const square = function (num) {
  return num * num;
}
square(7); //49
```

FUNCTIONS ARE... OBJECTS!

HIGHER ORDER FUNCTIONS

HIGHER ORDER FUNCTIONS

Functions that operate on/with other functions. They can:

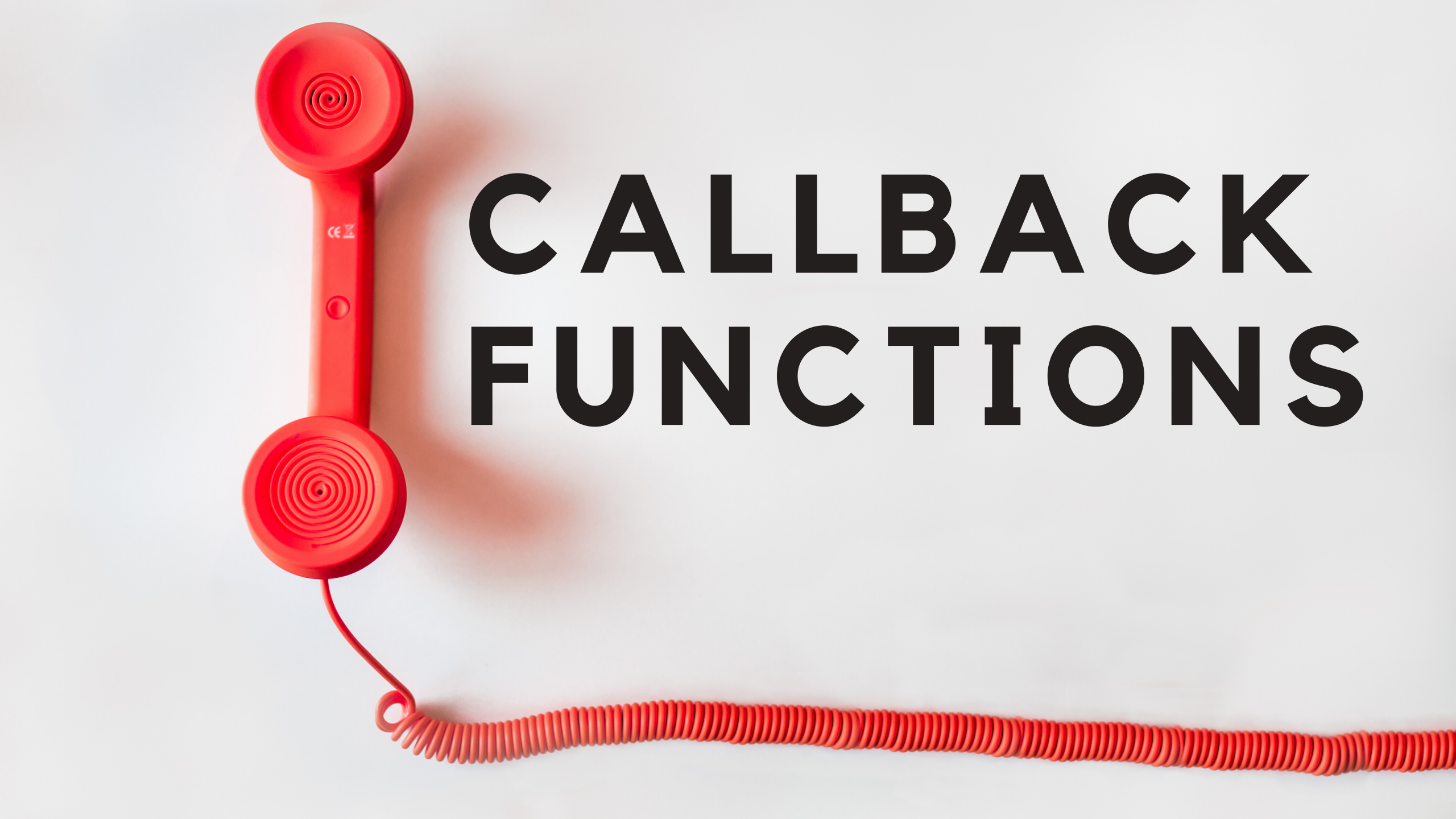
- Accept other functions as arguments
- Return a function

FUNCTIONS AS ARGUMENTS

```
function callTwice(func) {
  func();
  func();
}

function laugh() {
  console.log("HAHAHAHAHAHAHAHHAHAHAHAH");
}
callTwice(laugh) //pass a function as an arg!
//"HAHAHAHAHAHAHAHHAHAHAHAH"
//"HAHAHAHAHAHAHAHHAHAHAHAH"
```

RETURNING FUNCTIONS

```
function makeBetweenFunc(min, max) {
  return function (val) {
    return val >= min && val <= max;
  }
}

const inAgeRange = makeBetweenFunc(18, 100);

inAgeRange(17); //false
inAgeRange(68); //true
```


CALLBACK
FUNCTIONS

CALLBACK FUNCTIONS

A callback function is a function passed into another function as an argument, which is then invoked inside the outer function.

CALLBACKS

Callback Function

```
function callTwice(func) {
  func();
  func();
}

function laugh() {
  console.log("HAHAHAHAHAHAHAHHAHAHAHAH");
}
callTwice(laugh) //pass a function as an arg!
//"HAHAHAHAHAHAHAHHAHAHAHAH"
//"HAHAHAHAHAHAHAHHAHAHAHAH"
```

HOISTING

Something I need to cover that you shouldn't stress about if it confuses you.